



MEMORANDUM

To: EPA

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From: J. Lambert

Subject: Review Comments: Revised Rock Matrix Sampling Work Plan, Operable Unit 3, Olin Chemical Superfund Site (July 6, 2018)

Date: 8/3/2018

Nobis Group™, on behalf of the U.S. Environmental Protection Agency (EPA), has reviewed and generated the following comments on the “*Rock Matrix Sampling Work Plan, Operable Unit 3*” (Work Plan) prepared by Wood Environment & Infrastructure Solutions (Wood), on behalf of the Olin Corporation (Olin) for the Olin Chemical Superfund Site (the Site) in Wilmington, Massachusetts. Comments are divided into general vs. specific comments below.

GENERAL COMMENTS:

1. Several statements and interpretations in the Work Plan require more discussion or are not fully supported by the given facts; however, they do not significantly impact the proposed work, and therefore do not represent a barrier to Work Plan approval. The following items should be addressed in the summary report for this work:
 - a. Section 2.2, 3rd paragraph: Please include the specific equation used and explanation of individual parameters selected (such as the source and destination concentrations) to determine the NDMA migration distance based on Fick’s first law.
 - b. Section 2.3, 1st paragraph: Olin has previously provided output images from the fractured bedrock model but has not provided a full deliverable describing the modeling and results. The model should be described fully, including assumptions used to build and develop the model, input parameters for each run, and the results (including tabulated data) of a sensitivity analysis for each parameter. This model may be modified based on the results of the planned investigation.

- c. Any supporting data critical to the conceptual site model (CSM) that are used to develop conclusions (such as geophysical logs from other boreholes) should be included in the summary report itself so that the reader does not need to locate them in other documents.
2. Nobis has previously recommended installation of boreholes to evaluate matrix diffusion in other areas, such as near between the DAPL pools (vicinity of GW-43D), downgradient of the Main Street DAPL pool (west of GW-70D), and south or east of the GW-202 cluster (Attachment A, comment 6). The GW-202 cluster is in a relatively unfractured zone; however, the extent of this zone has not been confirmed to the southeast. NDMA has also been detected in bedrock at GW-80BR, more than 1,000 feet east of the GW-202 cluster. Given the narrow scope of the Work Plan as presented, the single borehole location is acceptable as an initial evaluation of the bedrock matrix diffusion CSM; additional bedrock data as described above may be required for remedial design.
3. EPA has requested additional clarifications and edits. Comments that have not been fully addressed, comments that require additional discussion, and comments not included in the previous general comments, are included below.
 - a. Comment 1, resolution of the mapped northern boundary of the Main Street DAPL pool: Olin has responded that the resolution of this area is well defined by soil borings and seismic lines. Can Olin provide a numerical value, such as within 10 feet/20 feet?
 - b. Comment 1, centroid of NDMA mass within the bedrock matrix: part of the evaluation of diffusion within the bedrock matrix will require an initial “maximum concentration”. The location of this point may have an impact on contaminant transport. The configuration of contamination in the bedrock should be considered and addressed in the final report.
 - c. Comment 3, number of testing locations: Olin contends that only a single borehole is needed in an area of highly contaminated bedrock. However, bedrock has not been extensively evaluated to date (only 5 bedrock boreholes have been installed in the immediate vicinity of the DAPL pools) and available data suggest that the bedrock fracture regime and lithology vary significantly between boreholes. We agree that given the relatively long time for work to be performed at the target borehole, it makes more sense to complete the evaluation proposed and address data gaps based on the results, rather than stepping boreholes out as part of the same field investigation. This work does not represent a delay in



implementing source removal, which can proceed in the overburden independent of efforts in the bedrock.

SPECIFIC COMMENTS:

1. Section 3.1.1, 4th paragraph: if significant rubble zones (more than a foot) or extensively weathered rock are encountered, how will this be addressed? Will a sample be attempted for these, or will they be skipped?
2. Section 3.3, 1st paragraph: please confirm that initial geophysical and other data will be shared with EPA prior to selecting FLUTe monitoring zones.
3. Figure 3 appears to show that rock core samples would be 4 inches long. DFN sampling of VOCs generally requires a “hockey puck” or less than 1-inch sample, and ideally, the sample length will be as short as possible; however, sampling for NDMA will require a larger volume. Please confirm the minimum sample core length that can be used while still collecting a sufficient sample volume. Given the potential limited space between fractures to evaluate matrix diffusion, the length of individual samples should be minimized to the extent possible.